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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,849	02/11/2002	Bardo Schmitt	216745US0	8959

22850 7590 11/13/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

ZUCKER, PAUL A

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 11/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Applicati n No.

10/068,849

Applicant(s)

SCHMITT ET AL.

Examiner

Paul A. Zucker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 6 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Current Status***

1. This action is responsive to Applicants' amendment of 2 September 2003 in Paper No 8.
2. Receipt and entry of Applicants' amendment is acknowledged.
3. Applicant's cancellation of claims 2 and 4 is acknowledged.
4. Claims 1, 3 and 5-15 are pending.
5. The objection to the specification set forth in paragraph 1 of the previous Office Action in Paper No 5 is withdrawn in response to Applicant's amendment.
6. The rejection under 35 USC § 102 (b) set forth in paragraph 2 of the previous Office Action in Paper No 5 is withdrawn in response to Applicant's amendment.
7. The rejection under 35 USC § 103 set forth in paragraph 3 of the previous Office Action in Paper No 5 is withdrawn is withdrawn in response to Applicants' remarks (Amendment, page 8, 3<sup>rd</sup> full paragraph) with regard to Hinenoya's teach that chromium acetate exerts no catalytic effect.

### ***New Rejections and Objections***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 102***

8. Claims 1, 3, 5, 7-13, 15-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hurtel et al (US 4,857,239 08-1989). Hurtel discloses (Column 3, lines

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15-50) the synthesis of acrylic anhydride from acrylic acid and acetic anhydride (in a 1.5 molar ratio which lies within the 2-1 range instantly claimed) in the presence of copper sulfate (a Cu-containing metal salt catalyst) and phenothiazine (a stabilizer). Hurtel discloses distillation of the final product acrylic anhydride that is thereby separated from the copper sulfate catalyst. Hurtel specifically discloses (Column 1, line 66-column 2, line 1) that copper sulfate and copper acetate are equivalents for use in the reaction. Copper acetate comprises an anionic organic compound that contains a carboxyl group in the form of the acetate ion. Hurtel further discloses (Column 1, lines 64-65) that the method can be applied to the synthesis of methacrylic anhydride. Hurtel therefore anticipates claims 1, 3, 5, 7-13, 15-18 and 20.

***Claim Rejections - 35 USC § 103***

9. Claims 1, 3, 5, 7-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hurtel et al (US 4,857,239 08-1989).

Instantly claimed is a method for the preparation of an unsaturated carboxylic acid anhydride comprising reacting an unsaturated carboxylic acid with a lower aliphatic carboxylic anhydride in the presence of a catalyst and a stabilizer. A method for the synthesis of methacrylic anhydride is also specifically claimed.

Hurtel teaches (Column 3, lines 15-50) the synthesis of acrylic anhydride from acrylic acid and acetic anhydride (in a 1.5 molar ratio which lies within the 2-1 range

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instantly claimed) in the presence of copper sulfate (a Cu containing metal salt catalyst) and phenothiazine (a stabilizer). Hurtel teaches distillation of the final product acrylic anhydride which is thereby separated from the copper sulfate catalyst. Hurtel specifically teaches (Column 1, line 66-column 2, line 1) that copper sulfate and copper acetate are equivalents for use in the reaction. Copper acetate comprises an anionic organic compound that contains a carboxyl group in the form of the acetate ion. Hurtel further teaches (Column 1, lines 64-65) that the method can be applied to the synthesis of methacrylic anhydride.

The difference between the process taught by Hurtel and that instantly claimed is that, in the instant process a molar ratio of the carboxylic acid anhydride to unsaturated carboxylic acid ranges from 0.55 to 0.65 while Hurtel teaches (Column 1, lines 32-34) a range of 0.20 to 0.49.

One of ordinary skill in the art, however, would have been motivated to modify the process of Hurtel by modifying the molar ratio of carboxylic acid anhydride to unsaturated carboxylic acid in order to optimize the process. Such modification is routinely performed and would not, in the absence of unexpected results, confer patentability over the teaching of Hurtel. Because such optimization is routinely performed, there would have been a reasonable expectation of success. Thus the instantly claimed process would have been obvious to one of ordinary skill in the art.

***Claim Objections***

10. Claims 6 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Allowable Subject Matter***

11. Claims 6 and 19 are drawn to allowable subject matter. The following is a statement of reasons for the indication of allowable subject matter: Hurtel, the closest prior art of record, neither discloses nor fairly suggests the use of the catalyst salts set forth in claims 6 and 19.

***Conclusion***

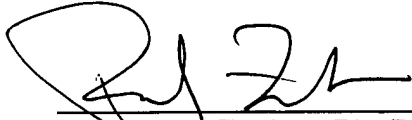
12. Claims 1, 3 and 5-15 are pending. Claims 1, 3, 5, 7-18 and 20 are rejected. Claims 6 and 19 are objected to.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 703-306-0512. The examiner can normally be reached on Monday-Friday 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703-308-4532. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

A handwritten signature in dark ink, appearing to read 'Paul A. Zucker', is written over a horizontal line.

Paul A. Zucker, Ph. D.  
Patent Examiner  
Technology Center 1600